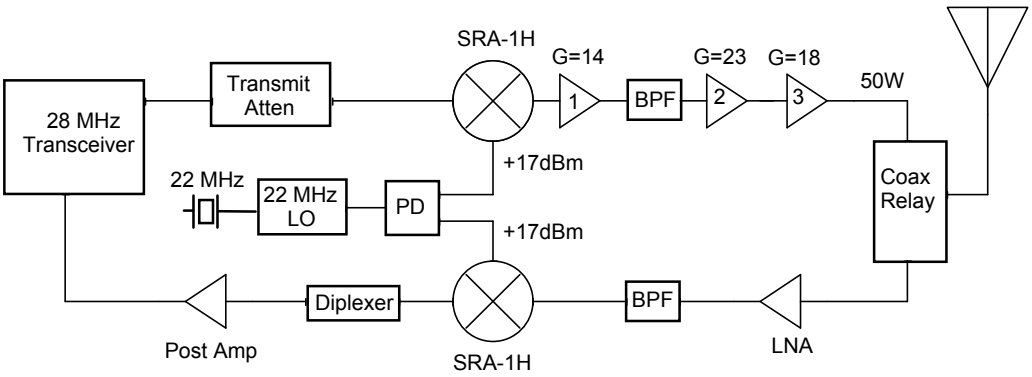
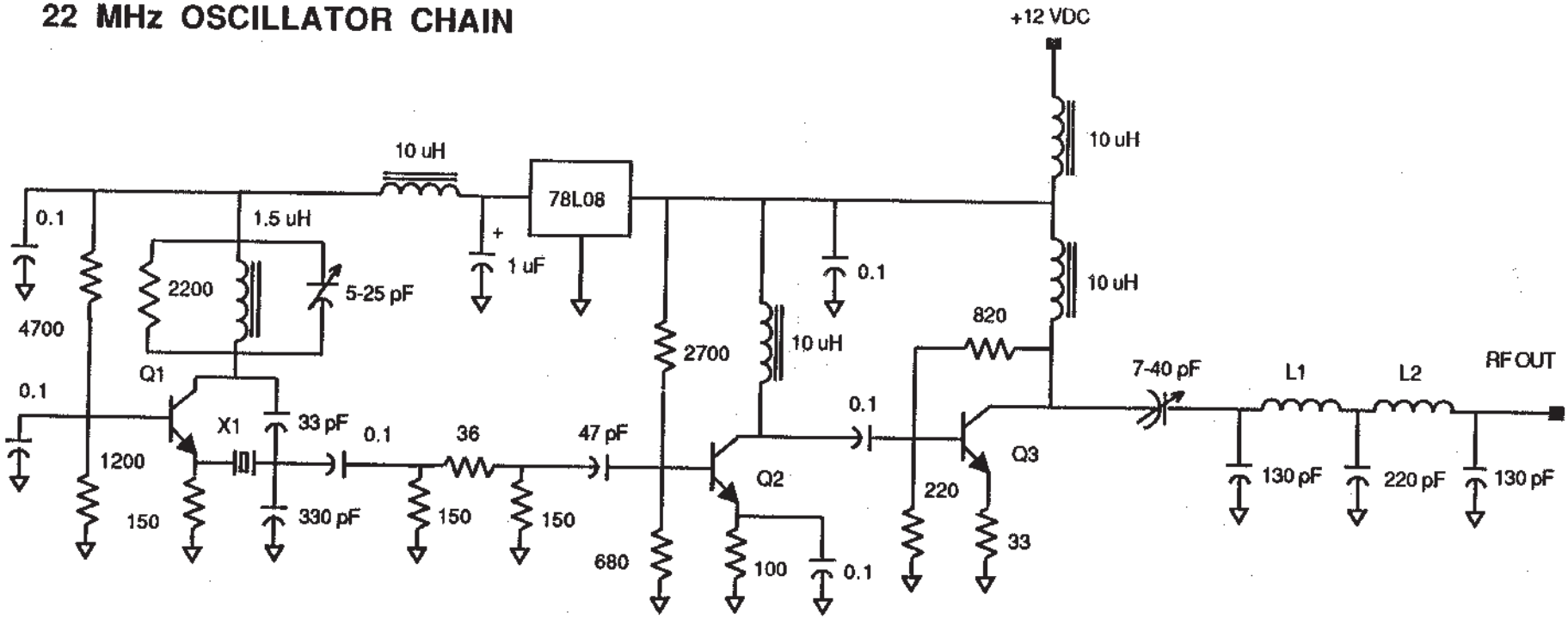
50 MHz Transverter WB3JYO design
built by WA3JUF 1995



WB3JYO design except:
Amp1 = SD1520
LNA = MGF1302
LO = w/ 60 degC PTC thermistor
and SD1520 in output
PD = Mini-Circuits ZFSC-2
BPF=YU1LM (2007)

22 MHz OSCILLATOR CHAIN



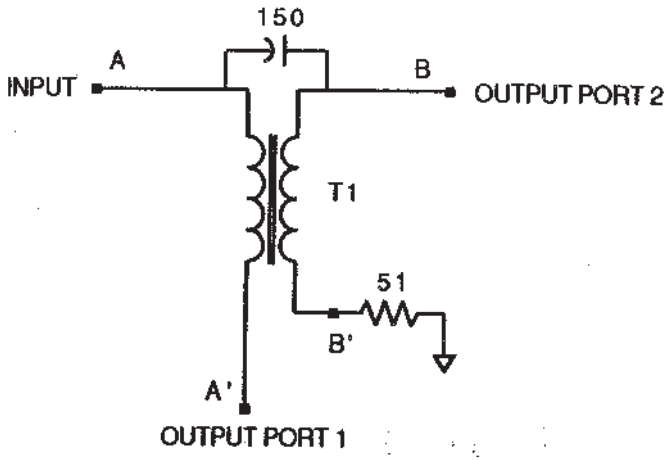
Q1, Q2 2N5179
Q3 2N3866 (HEATSINK REQUIRED)
X1 22 MHz SERIES RESONANT
L1, L2 12 t #22 ENAM., 1/4 INCH I.D.

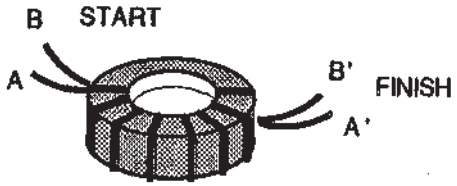
RESISTORS IN OHMS
CAPACITORS IN uF

22 MHZ OSCILLATOR CHAIN
Pout > +20 dBm
HARMONICS > 40 dB DOWN

WB3JYO 10-90

FIG. 1 LOW LOSS POWER SPLITTER





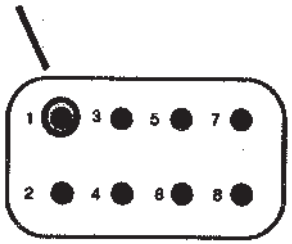
T1 IS MADE FROM 7 TURNS #28 ENAMEL WIRE WOUND BIFILAR ON AN AMIDON T37-2. TOROID. THREAD TWO PIECES OF WIRE THRU THE TOROID AND, WHILE HOLDING THESE PARALLEL, WIND 7 TURNS. USE AN X-ACTO KNIFE TO STRIP THE INSULATION FROM EACH END. LABEL THE WIRES ON ONE END AND THEN USE AN OHM METER TO IDENTIFY THE OPPOSIT ENDS. CONNECT THE SPLITTER AS SHOWN.

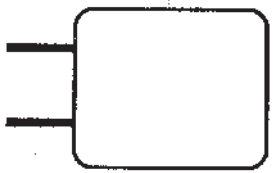
FIG. 2 MINI-CIRCUITS SRA-1H

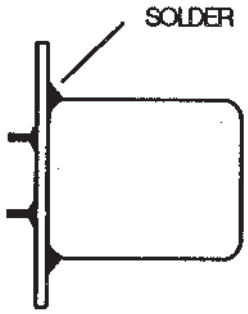
TOP VIEW

LO 8
RF 1
IF 3,4 (CONNECT TOGETHER)
GND 2,5,6,7

BLUE BEAD INDICATES PIN 1







MOUNT MIXER THRU DOUBLE SIDED PC BOARD, WITH THE CASE SOLDERED TO THE GROUND PLANE. DRILL CLEARENCE HOLES FOR ALL PINS AND USING A LARGE DRILL BIT BY HAND, COUNTERSINK EACH HOLE ON THE GROUND SIDE OF THE BOARD.

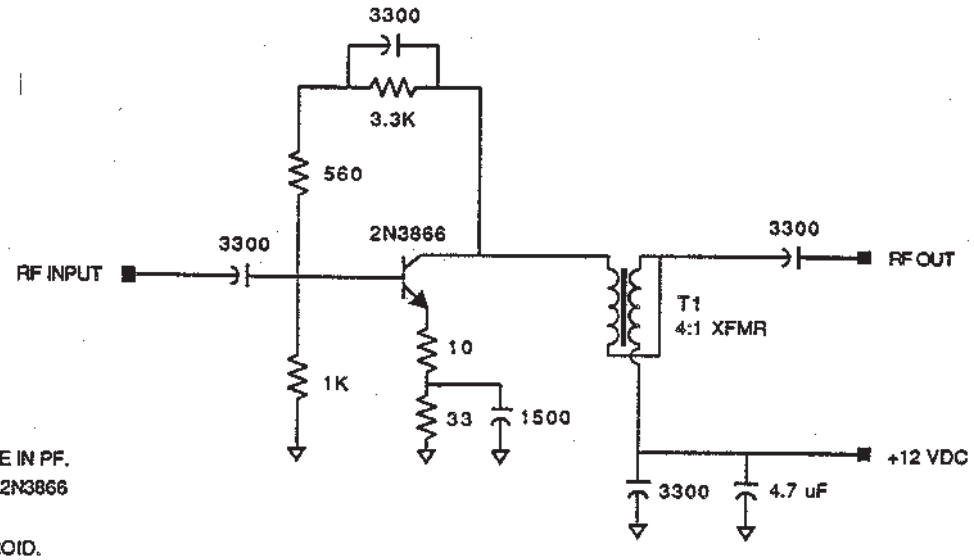
WB3JYO 11-90

A 50 MHz 2N3866 LINEAR AMPLIFIER

A 2N3866 amplifier stage follows the mixer in the 50 MHz transmit converter. An inexpensive 2N3866 was chosen since it is a commonly available device having excellent linearity; when driven to +7 dBm in the 50 MHz transmit chain all intermod products are more than 60 dB down. The amplifier has 15 dB gain and yet is stable into a 10:1 mismatch.

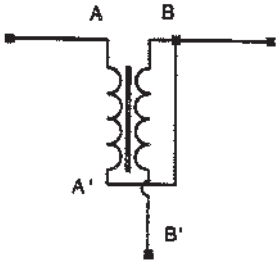
As with all of the stages, a point-to-point "dead bug" construction technique is recommended. Care must be taken to keep all lead lengths to a reasonable minimum. All resistors are 1/4 watt. Remember to keep the 2N3866 away from ground since the case is the collector. Use a small push-on type heatsink fashioned from tin or copper as shown. The transformer is wound as shown in the pictorial - wire size is not critical.

50 MHZ 2N3866 LINEAR AMPLIFIER

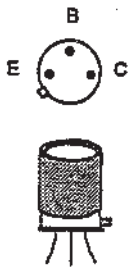


NOTE
RESTANCE IN OHMS, CAPACITANCE IN PF.
USE PUSH-ON TYPE HEATSINK ON 2N3866

T1 8t #28 BIFILAR ON T30-6 TOROID.
CONNECT TRANSFORMER AS SHOWN.



2N3866

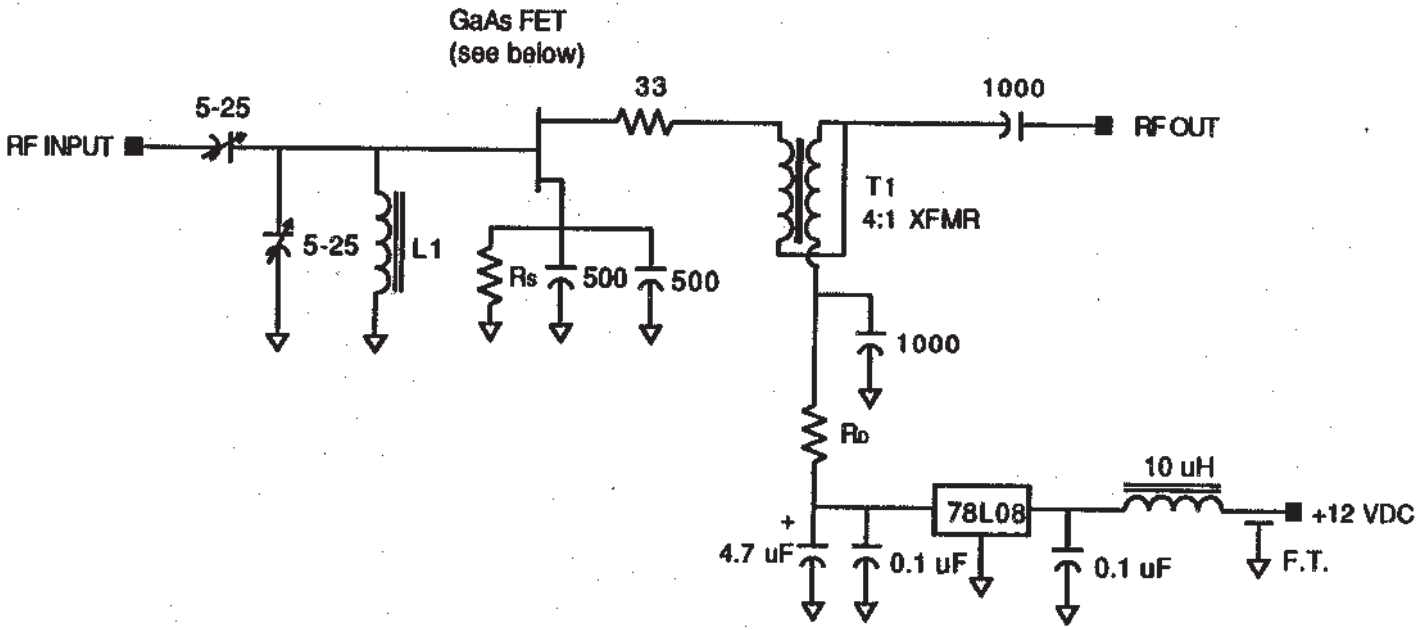


HEATSINK MADE FROM COPPER

ICQ = 40 mA
15 dB GAIN @ 50 MHz
P1dB = +20 dBm
STABLE INTO 10:1 VSWR
IMD < -60 dBc @ +7dBm Pout

WB3JYO 10-89

50 MHZ LOW DISTORTION PREAMP



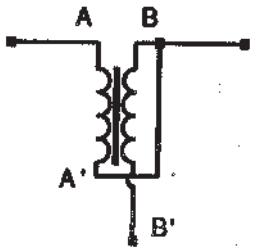
-10-

NOTE

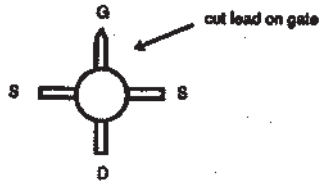
RESTANCE IN OHMS, CAPACITANCE IN PF

L1 12t #26 ENAMEL ON T44-10 TOROID

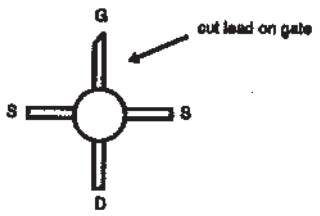
T1 8t # 32 ENAMEL BIFILAR WOUND ON T25-6 TOROID
CONNECT TRANSFORMER AS SHOWN



ATF13484 TOP VIEW



NE72084 TOP VIEW



TYPICAL BIAS VALUES

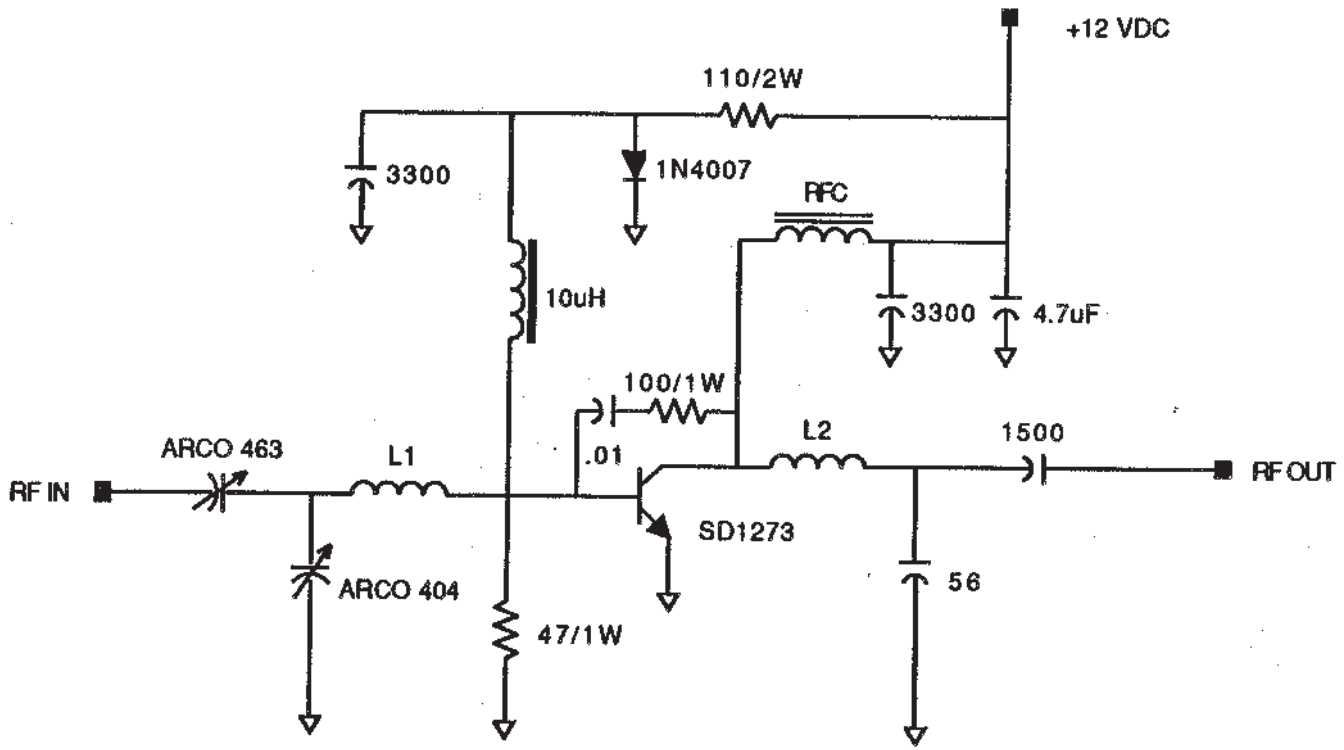
Biasing for each transistor has been optimized for lowest distortion in the above circuit. Use the resistor values as a starting point and adjust for the recommended VDS and ID.

	ATF13484	NE72084
RS	47	47
RD	220	39

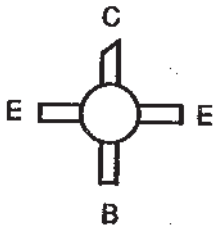
	ATF13484	NE72084
Vos	3.5V	4V
Ios	15 mA	40 mA
P1dB	+9 dBm	+14 dBm
IP3	+22 dBm	+24 dBm
GAIN	22 dB	26 dB
NF	0.7 dB	0.5 dB

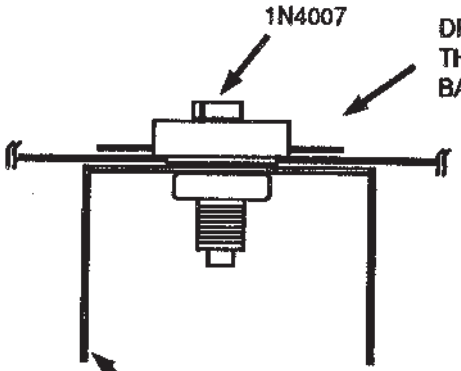
WB3JYO 4-91

50 MHz SD1273 LINEAR AMPLIFIER



THOMPSON SD1273





NOTE

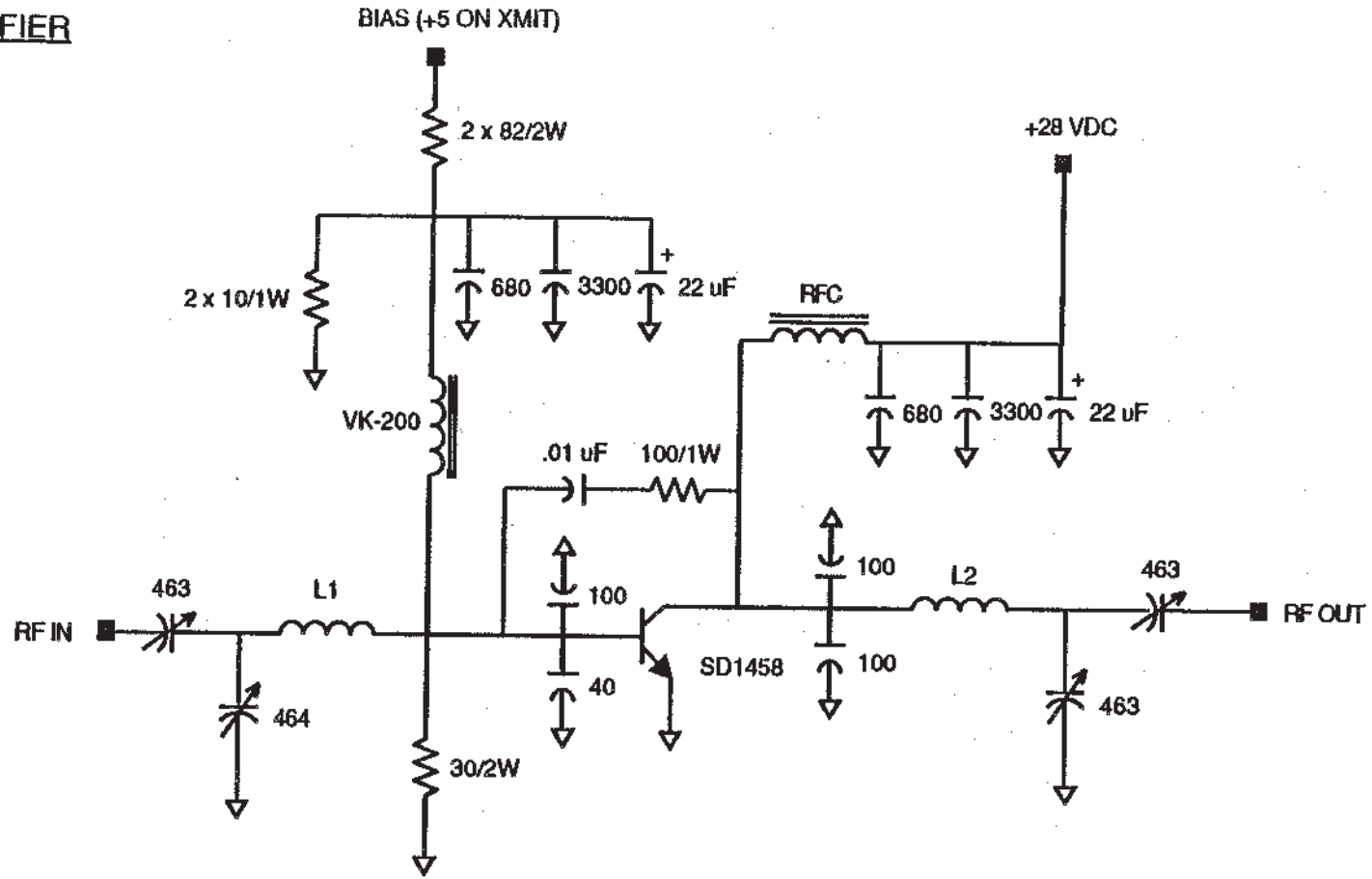
L1 5t #20 AWG, 0.125 ID
L2 SAME
RFC 10t #26 AWG on 100 ohm/1W
MOUNT DIODE ON TRANSISTOR CAP AS SHOWN

CIRCUIT MAY BE BUILT USING
POINT-TO-POINT CONSTRUCTION.
USE WIRE "THRU's" TO PCB BACK-SIDE
FOR GOOD GROUNDING. MOUNT DIODE
ON TRANSISTOR CAP AS SHOWN

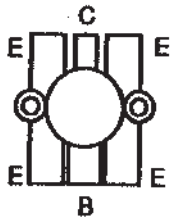
GAIN = 23 dB @ 50 MHz
Icq = 200 mA
P1dB = +39 dBm
STABLE INTO 10:1 VSWR
IMD<-45 dBc @ +23 dbm

WB3JYO 11-90

50 MHz SD1458 LINEAR AMPLIFIER



THOMPSON SD1458

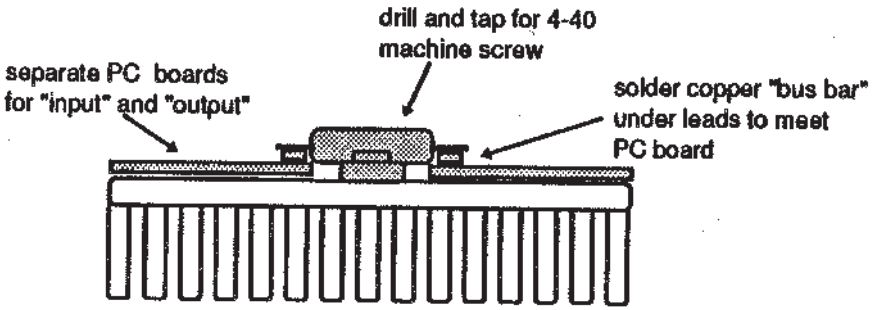


NOTE
Resistance in ohms, capacitance in pF unless otherwise specified

All variable capacitors are ARCO type (#463 is 20-180 pF, #464 is 45-280 pF)

L1 = 2 turns #20 AWG on 3/8 inch ID
L2 = 4 turns

RFC consists of 10 turns # 20 AWG enameled wire wound on a 100 ohm/2 W resistor.

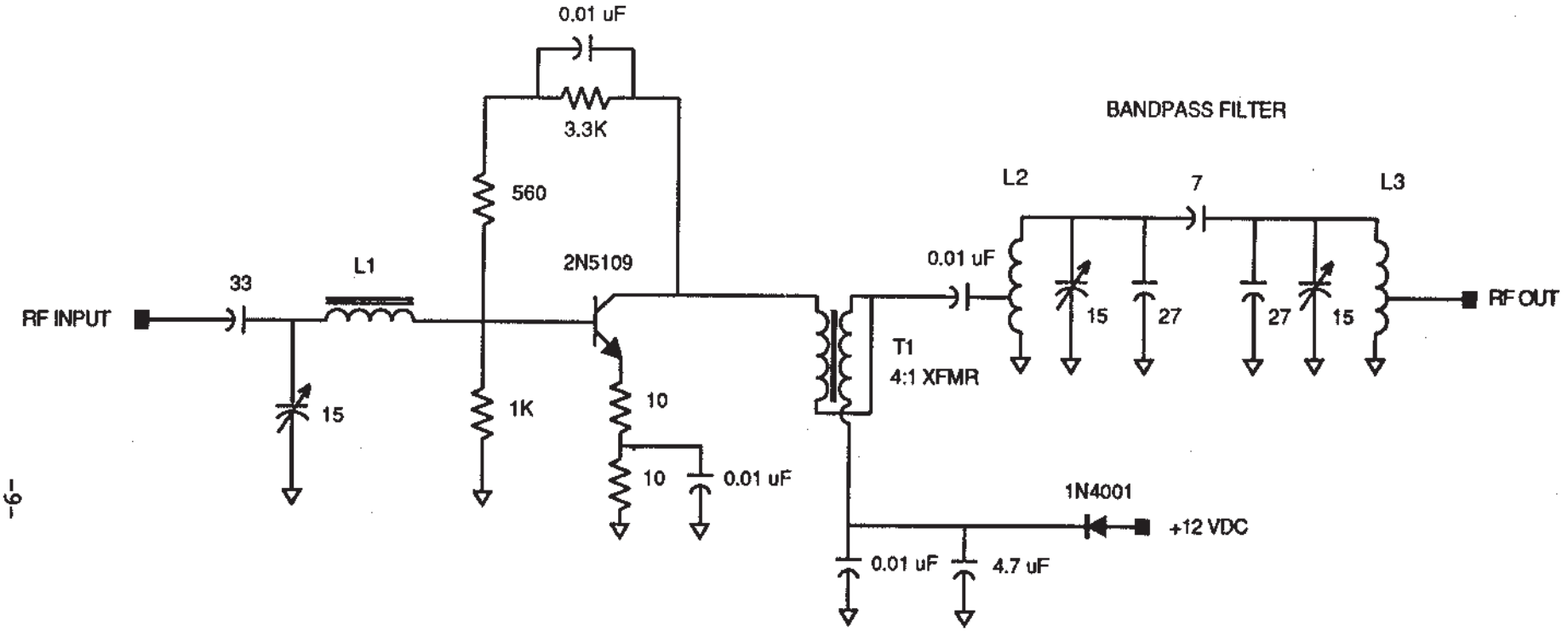


2x1x4 INCH HEATSINK

GAIN = 18dB @ 50 MHz
P1dB = +47 dBm
Icq = 1.5 A
STABLE INTO 10:1 VSWR
IMD < -44 dBc @ +40 dBm

WB3JYO 2-91

28 MHZ LOW-DISTORTION POST AMPLIFIER

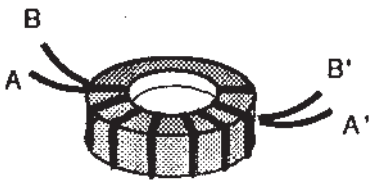


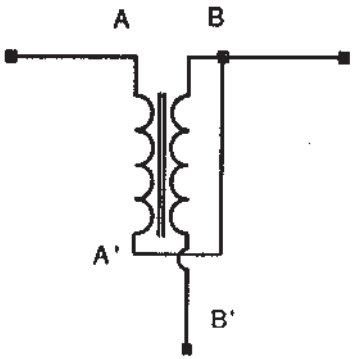
NOTE

CAPACITANCE IN pF UNLESS NOTED.
USE PUSH-ON TYPE HEATSINK ON 2N5109

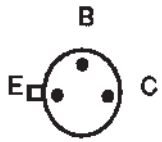
L1 15t #26 ENAMEL ON T37-6 TOROID
L2, L3 15t #26 ENAMEL ON T37-6,
TAP AT 4t FROM GROUND

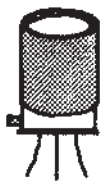
T1 20t #30 BIFILAR ON T37-10 TOROID.
CONNECT TRANSFORMER AS SHOWN.





2N5109





HEATSINK MADE
FROM COPPER

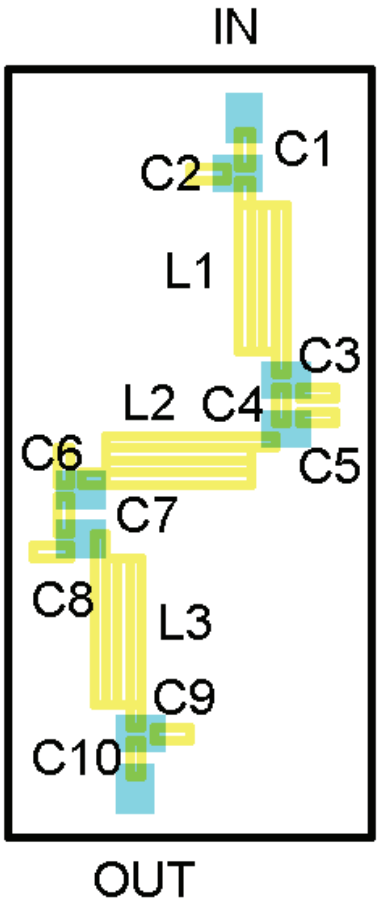
GAIN = 15 dB @ 28 MHz
Icq = 60 mA
P1dB = +23dBm
Third Order Intercept Point = +32 dBm
STABLE INTO 10:1 VSWR

WB3JYO 12-91

Band Pass Filters for 6m

Dipl ing Tasić Siniša –Tasa YU1LM/QRP

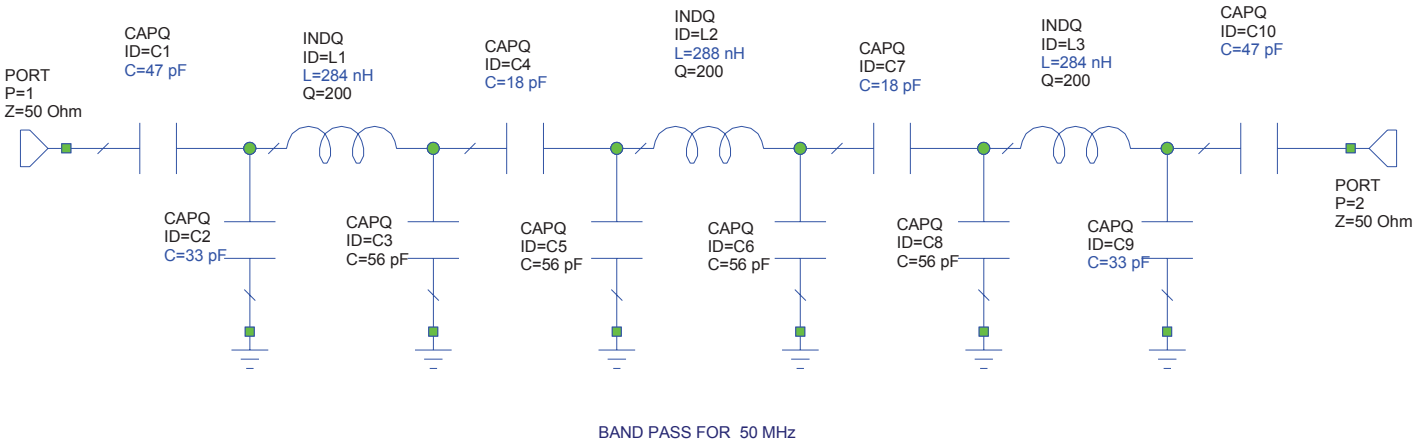
At local HAM forum BalkanDX was discussion about BP (band pass) filters for the 6m few years ago. Here are my proposals band pass filters for 6m band. First filter is with minimum IL (insertion loss) lower than 0.7 dB. This filter is possible to use except in the receiver and also in the transmitter chain. Second filer is with moderate IL loss less than 1.5 dB. The third filter is with max selectivity and IL is less than 2.5 dB. Realization is a very simple and non-critical. Please take care only about physical coils placement. It is necessary to prevent mutual coupling between coils or this coupling has to be minimized. This unwanted coupling will destroy out of band selectivity.
Best way for montage is free space construction but it is possible make a PCB. Take care that coils are perpendicular one to each other. See my proposal down please



PCB DIMENSION 40 X 80 mm

All coils are equal and wound with isolated copper (Cu) wire diameter 1.2 mm (AVG18) without support on body diameter 14 mm. Coils length is 5 mm with 4 turns. For coils with smaller inductivity than 320 nH it is necessary only to make carefully space between wounds.

1. Minimum IL 6 m BP filter –This filter can be at RX input or TX output. BP Bandwidth is 8.7 MHz (-3 dB)



BAND PASS FOR 50 MHz